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EFFECTUAL ECOPRENEURSHIP IN THE FINNISH FISH INDUSTRY - A CASE STUDY

Master´s Programme in Chemical, Biochemical and Materials Engineering
Major in ENVIRONMENTAL MANAGEMENT

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Abstract of master's thesis

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Abstract

The need for sustainable protein sources is growing globally due to the climate change issues and population growth. Cyprinidae have been proven to be a very sustainable protein source and thus their utilization is on the agenda of the Finnish government.

The thesis uses effectuation and ecopreneurship to produce new information about the possibilities of utilizing Cyprinidae in Finland. They're importance and characteristics are gone through in chapters 2.1 and 2.2. The characteristics of Cyprinidae and the current stakeholders of the issue in Finland are gone through in chapters 2.3.1 and 2.3.2. Chapter 2.3.3 examines the value extraction and value chains currently used in Finland.

To gain better understanding on the possibilities of effectuation and ecopreneurship in improving the utilization of Cyprinidae, a case study of Särkifood Oy is used. The case study is presented in chapter 3.

As a result of the study, using more effectual reasoning is recommended in the value chain especially to the public authorities and marketing companies. Furthermore, it is found that especially marketing companies can benefit from combining effectual reasoning with ecopreneurial principles. This can significantly improve the possibilities of using effectual reasoning by making other stakeholders more prone to help the start-up or co-operate with the start-up.

Keywords **Cyprinidae, effectuation, ecopreneurship, särki, lahna, fish industry, start-up**

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Tiivistelmä

Tarve kestäville proteiinilähteille kasvaa globaalisti ilmastonmuutoksesta ja väestönkasvusta johtuen. Särkikalojen on todettu olevan erittäin kestäviä proteiininlähteitä ja siksi niiden hyödyntäminen on Suomen valtion intresseissä.

Tämä diplomityö käyttää toteuttamiskeskeisyyttä ja ympäristöyrittäjyyttä tuottaakseen uutta tietoa särkikalojen hyödyntämisen mahdollisuuksista Suomessa. Näiden termien tärkeys ja luonne esitellään kappaleissa 2.1 ja 2.2. Särkikalojen ominaisuudet ja nykyiset sidosryhmät Suomessa esitellään kappaleissa 2.3.1 ja 2.3.2. Kappale 2.3.3 tutkii särkikalojen arvoketjuja ja arvon eristämistä.

Jotta toteuttamiskeskeisyyden ja ympäristöyrittäjyyden mahdollisuudet särkikalojen hyödyntämisessä saataisiin esille, hyödynnetään Särkifood Oy:n tapaustutkimusta. Tapaustutkimus esitellään kappaleessa 3.

Tutkimuksen tuloksena esitetään, että toteuttamiskeskeisyyttä voisi olla hyödyllistä lisätä etenkin julkisyhteisöjen ja valmistuttajayhtiöiden toimesta. Lisäksi havaittiin, että etenkin valmistuttajayhtiöt voivat hyötyä yhdistäessään toteuttamiskeskeisyyden ja ympäristöyrittäjyyden periaatteita. Ympäristöyrittäjyyden arvoihin sitoutuminen voi nimittäin merkittävästi lisätä toteuttamiskeskeisyyden periaatteiden toteuttamismahdollisuuksia saamalla muut sidosryhmät valmiimmiksi auttamaan yritystä tai tekemään yrityksen kanssa yhteistyötä.

Avainsanat: Särkikalat, toteuttamiskeskeisyys, ympäristöyrittäjyys, särki lahna, kalateollisuus, kasvuyrittäjyys.

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1. Introduction

The megatrends of population growth, climate change and globalization are shaping the world. The future of food supply, especially the supply of protein, and fresh water is unclear. Growing population needs more protein, but the production of meat cannot be increased without drastic acceleration of climate change. The added demand for protein needs to be produced somehow.

At the same time, globalization is changing the labor market of food producers significantly. Never in the history of human kind has it been so easy and cheap to transport protein globally. This development of added global competition in protein production forces the food producers to adapt, especially in the countries of high labor costs.

This thesis combines three (3) different fields of study to address these issues. All the fields have previously been researched individually but never together.

1. The thesis investigates **effectuation**, a rising trend in the study of entrepreneurship, which among other things emphasizes trial culture and learning-by-doing. Effectuation is looked at more closely in section 2.1.

2. The thesis wants to look at effectuation from the angle of **ecopreneurship.** Traditional enterprises have only one bottom line, the monetary benefit gained annually. In ecopreneurship, there are two bottom lines: monetary value and environmental value. Ecopreneurship is investigated further in section 2.2.

In the field of sustainability research, the term triple bottom line has gained more attention than just double bottom line. It considers all three factors of sustainability: economic, environmental and social. The social factor is excluded from this study.

3. The third field of study chosen to this thesis are ***Cyprinidae***, a family of fish that are very common in Finland. This thesis focuses mainly on two specific species, the common roach, särki (*Rutilus Rutilus*) and Bream, lahna (*Abramis Brama*). This family of fish is chosen as a media through which this thesis will study the unique combination of effectuation and ecopreneurship. In Finland, fishing these fish is found to have positive environmental effects, thus the combination of monetary and environmental benefits is uniquely combined in this business opportunity. The species *Rutilus Rutilus* and *Abramis Brama* are chosen as spearhead species to be studied before others because they are the most well-known and common *Cyprinidae* in Finland. The *Cyprinidae* and their environmental and monetary benefits are investigated further in section 2.3.

This thesis has two goals:

1) To produce new information about the possibilities of using effectuation to develop more beneficial methods for utilizing *Cyprinidae* in Finland. This includes looking at how *Cyprinidae* are utilized in Finland today. Has effectuation been already used or have the stakeholders used causal thinking? Who are these stakeholders? These questions are answered in chapters 2.3.3. and 2.3.2.

The word “beneficial” in the goal is defined through ecopreneurship. Creating of value, benefit, is looked through both monetary and environmental value.

2) To produce new information on how effectuation and ecopreneurship can be used together in the first phases of journey of a start-up.

The get to these goals, a case study of Särkifood Oy is used. The company was founded in spring 2016 by Paavo Vallas, the writer of this thesis. In chapter 3 the journey of Särkifood Oy is elaborated and the application of effectuation and ecopreneurship principles along the journey is evaluated.

In chapter 4, the results are looked at and discussed. In chapter 5, conclusions are drawn from the previous parts.

2. Background

2.1 Effectuation

Effectuation and effectual principles were first put to words by Sara Sarasvathy in her case study “What makes entrepreneurs entrepreneurial?” in 2001. Sarasvathy analyzed how hand-picked, expert entrepreneurs from several different industries reasoned while tackling given problems in transforming an idea into a company. Saravathy analyzed the process and found out several principles that the expert entrepreneurs used. Sarasvathy compiled these into a way of thinking she called effectual reasoning.

Comparing effectual reasoning to causal reasoning might help understand the concept. Causal reasoning is the traditional way entrepreneurship has been taught at MBA-programs. (Sarasvathy 2001) Here causal and effectual reasoning are compared to each other on five categories.

1. Goals, resources and success

In causal reasoning, there is a given goal. Emphasis is on gathering the necessary resources to accomplish that goal. Success is defined as how accurate the original vision turns out to be and how well the strategies made for that are executed. (Sarasvathy 2001)

In effectual reasoning, the starting point is not a given goal. Instead, the entrepreneur individually defines success. This definition might change as the venture changes. Furthermore, effectual reasoning starts with a given set of means while letting goals emerge over time. This is called the bird-in-hand principle. (Sarasvathy 2001)

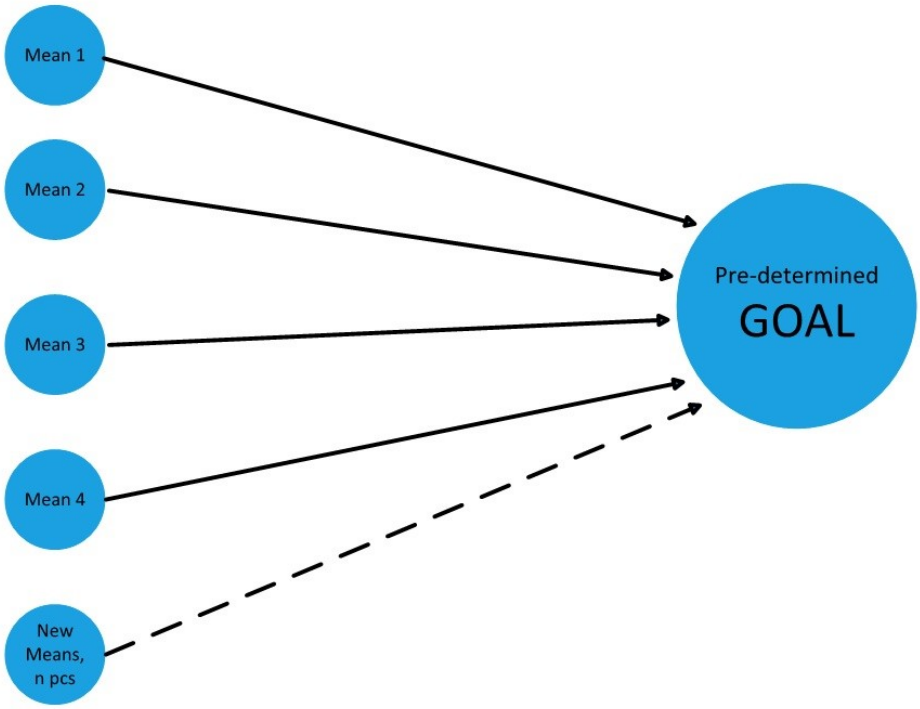
The bird-in-hand principle suggest that entrepreneurs should start by examining the set of means they already possess. These means can be divided to three subcategories.

A) Who they are – motivations, values, abilities

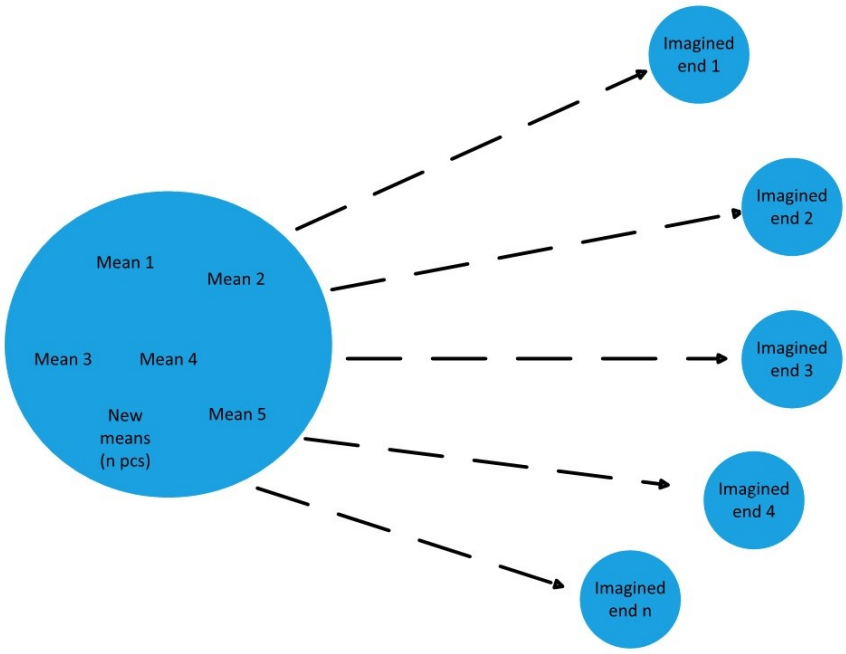
B) What they know – education, expertise and experience

C) Whom they know – their networks: social and professional (Sarasvathy 2001)

Graphs 1 and 2 explain the difference between a causal and an effectual approach.



Graph 1: In causal reasoning, the goal is pre-determined. The entrepreneur can then choose between the given means (causal reasoning) or also generate new means and choose from them (creative causal reasoning). (The graph was formed based on the graph used by Sarasvathy 2001)



Graph 2: In effectual reasoning, the entrepreneur starts with their means and imagines new ends using the means. (The graph was formed based on the graph used by Sarasvathy 2001)

Read et al (2010, pp. 52-73) elaborates the benefits of effectual reasoning. Effectual approach allows the entrepreneur to move directly to implementation, thus accelerating their learning process. Furthermore, Read et al argues it is better to be mean-driven (effectual) than goal-driven (causal). According to them, high-end goal like “I want to be the richest man of my hometown” doesn’t tell the entrepreneur what to do on the first day of the venture. Lower lever goals like “starting a sushi restaurant in Punavuori” constraints the entrepreneurs’ actions to the pursuit of resources the entrepreneurs don’t currently possess.

Starting with you means (=effectual approach) doesn’t have these problems. However, it has many benefits. Sticking to “who you are” helps not only to decide what to do but also what not to do. It vaccinates the entrepreneur against the infectious dreams of fantastic, once-in-a-lifetime opportunities that require the entrepreneur to chase money they don’t have, work with people they

are not sure they like, or deal with technologies and markets they know little about (Read et al, 2010, p.81)

2. The view of the future

In causal reasoning, future is seen as something that can be predicted. Thus, market research before entering the market is both necessary and useful. (Sarasvathy 2001)

In effectual reasoning, future is seen as something that can be created. The focus is not on researching the market but selling to actual customers. Selling is often done already before there is a finished product. The results of the sales attempts are used to re-direct the company. Learning by doing is enforced. (Sarasvathy 2001)

3. Justifying the decisions

In causal reasoning, many decisions are made based on pre-calculated expected returns. To get moved forward, ideas need to have high enough expected returns. Venture is at the center of decision making. (Sarasvathy 2001)

In effectual reasoning, decisions are made based on the affordable loss principle. Rather than pre-calculating the vast loads of money that can be made with the idea, the effectual entrepreneur sets a limit of affordable loss. In monetary terms, this is, how much money can the entrepreneur lose in the worst-case scenario. This amount needs to be adjusted so that the entrepreneur can afford the worst-case scenario. (Sarasvathy 2001) However, the affordable loss principle doesn't only consider the monetary aspect, but also the time commitment, reputation commitment and emotional commitment that the entrepreneur is thinking of putting into the venture. In the worst-case scenario, the entrepreneur would not only

lose money but also time and possibly reputation. He would also most certainly feel negative emotions. (Read et al, 2010, pp.98-99)

The sum of all these losses, money, time, reputation and emotional loss, needs to be at an affordable level for the entrepreneur to move on. This principle puts the entrepreneur at the center, not the venture. (Read et al, 2010, p.99)

4. Partnerships

Causal reasoning depends on competitive analyses. Others are a threat, the law of the survival of the fittest is applied. Partners are chosen to bring in the needed resources for a given goal. (Sarasvathy 2001)

Competitive analyses are not at the center of effectual reasoning. Since the goal can merge over time, it makes little sense to spend time on competitive analyses for a certain field or goal. (Read et al, 2010, p.113)

Effectual reasoning follows the strategic partnerships principle. In effectual reasoning it is believed that those who choose to join the venture, those who themselves wish to join the venture, will eventually make the venture what it is. Other stakeholders are valued based on their willingness to make actual commitments to the project. (Read et al, 2010, p.113)

5. Contingencies

In causal reasoning, surprises are a bad thing. Pre-existing knowledge and prediction are used to minimize the possibility of surprises. (Sarasvathy 2001)

In effectual reasoning the leveraging contingencies principle is followed. Read et al (2010, p.143) argues that there will always be contingencies, whether they come in the form of unexpected meetings, unexpected events or unexpected information. Read et al

continues that the contingencies can be either positive or negative. The surprises themselves don't shape the future, but entrepreneurs can change the future based on them.

Read et al (2010, p.144) goes through three ways to react to contingencies.

A. Adaptive response:

- The entrepreneur changes themselves to fit in with the contingency.

B. Heroic response:

- The entrepreneur changes the world into a state they prefer.

C. Entrepreneurial response:

The entrepreneur uses the contingencies as inputs to the entrepreneurial journey. The contingencies change the entrepreneurs means (who they are, who they know and/or what they know). Thus, the directions and the imagined ends of the venture are likely to change as well.

The differences of causal and effectual reasoning are compiled to table 1.

Table 1: The differences of causal and effectual reasoning.

Variable	Causal	Effectual
Goals	Chosen in the start	Emerge over time
Success	Is the goal achieved?	Individually defined
Resources	Gather them to accomplish the goal	Start with one's means
Future	Can be predicted. Form precise plans	Can be created. Learn by doing.
Justifying the decisions	Excepted returns	Affordable loss
Partnerships	Often rivals. If chosen, it's based on the resources they provide.	Often partners. Partners self-select, willingness to make commitments is essential.
Contingencies	Bad	Good

Even the same entrepreneurs can use both causal and effectual reasoning depending on the circumstances. Effectual reasoning is often the most beneficial in the early stages of a new venture. Especially in highly uncertain situation, such as targeting a new, emerging market, effectual reasoning can be beneficial. Causal reasoning is based on analyzes and predictions that are hard or impossible to do in such occasions. However, in a stable market where historical data is available and relatively reliable, causal reasoning can be beneficial. (Sarasvathy 2001)

2.2 Ecopreneurship

Sustainable development can be divided into three segments: economic, environmental, and social development. Traditionally entrepreneurship has focused only on the economic development (Kirzner 1973; Belz & Binder, 2017). Thus, companies have made decisions valuing one bottom line, the monetary benefit, over the others.

In double bottom line thinking the company choses two of the three segments of sustainability as the basis of their decision making. In triple bottom line all three are selected. (Belz & Binder, 2017) The two or three bottom lines can be re-enforcing but often trade-offs are necessary (Hahn et al, 2010).

Table two presents different variations of entrepreneurship based on which segments of sustainability they focus on.

Table 2: Variations of entrepreneurship based on the aspect of sustainability on which they focus.

Term	Economic	Environmental	Social
Conventional entrepreneurship*	X		
Ecopreneurship**	X	X	
Social entrepreneurship***	X		X
Non-governmental organization (NGO)		X	X
Sustainable entrepreneurship***	X	X	X

* (Belz & Binder, 2017)

** (Linnanen, 2005)

*** (Dacin et al. 2010)

In this thesis the term double bottom line thinking refers to ecopreneurship.

Several studies have found other characteristics that are common among companies with more than one bottom line. In 2008, Choi and Gray completed a study in which they noticed that the ventures with more than one bottom line tend to be positioned at the high end of the market. They believed that in these ventures it was believed that the higher margins in high end products allowed them to pass on the higher costs of sustainable practices to consumers.

In 2013, Keskin et al. found in their study that it is often difficult to transform the sustainability goals into product features that increase the value obtained by customer. They suggest that to succeed, these ventures need to be able to prioritize their sustainability goals and align them with customers' needs. However, already in 1993, Peattie claimed in his study that 10%-20% of consumers in Western societies are willing to pay premium for environmentally friendly products. This indicates that for those consumers the transition from the sustainability goal of environmental benefit to customer value is direct.

Consumers' answers to questionnaires and actual customer behavior can differ. Organic foods are often more expensive than their counterparts, but they provide environmental value. Thus, the sales of them could be a more reliable statistic towards the amount of people who are willing to pay a premium for sustainable products. According to Honkanen et al. (2006) the criteria for a food to be considered organic differs from one country to another. However, they state that in general, materials and methods that are environmentally friendly are used. For example, organic food is produced without growth hormones, antibiotics, pesticides, herbicides and inorganic fertilizers. The market share of organic food was 2,3% in Finland in 2017 (Pro Luomu ry, 2018). However, the sales of organic food have grown over 50% since 2012 and the trend seems to be accelerating rather than stabilizing (Pro Luomu ry, 2018). On the other hand, the increase of environmental

awareness and especially the increase of its effect on consumer behavior has been proved to be slow (Meffert and Kirchgeorg, 1993; cited in Linnanen, 2005)

Whether 2,3% or 10-20% or something in between, the consumers that are willing to pay a premium for the environmental value provided by the product are a minority. Moreover, Linnanen (2005) argues that there are other critical issues that ecopreneurs need to address that entrepreneurs using only one bottom line don't. Linnanen argues that ecopreneurs have difficulties in finding investors that can share their vision for the venture. Surprisingly, people interested in investing to ventures with ecopreneurial vision also experience difficulties in finding suitable ventures. Some of these difficulties might be explained by the fact that many environmental companies seem to lack the knowledge on the financial sector and obtaining capital. Moreover, the ethical reasoning typical for ecopreneurs can create confusion within the mainstream business community (Linnanen 2005).

However, the lack of funding can sometimes also be beneficial to ecopreneurs. Linnanen (2005) suggests that receiving venture capitalist (VC) money can sometimes lead to neglection of the values of the founders in the venture. Thus, the ecopreneurs' reasoning behind choosing entrepreneurship as a career can be destroyed if the chosen VC appreciates only the monetary bottom line. (Linnanen 2005). Moreover, the term entrepreneurial bricolage has been used to describe situations in which the lack of resources can alter the way of thinking in the venture. This can in some cases be beneficial to the progression of the venture. (Baker & Nelson, 2005)

In many ecopreneurs' ventures two distinctive features can be identified: 1) controlled ownership and low mobility of shares, and 2) an emotional dimension which creates altruistic behavior alongside the traditional entrepreneurial self-interest. (Linnanen 2005) Especially the first feature can explain some of the friction that

is identified between ecopreneurs and the mainstream business community.

Nevertheless, by definition, ecopreneurs have a desire to change the world and to make money/ build a business. The magnitude of these desires can independently vary from one ecopreneur to other (Linnanen 2005)

Based on the differences of magnitudes of desires, one can identify four types of ecopreneurs. These types are presented in table 3

Table 3: Different types of ecopreneurs

Ecopreneur type	Desire to change the world	Desire to make money/ build a business
Self-employer	Low	Low
Nonprofit	High	Low
Opportunist	Low	High
Successful Idealist	High	High

It is notable that the nonprofits often evolve from double bottom line to triple bottom line.

2.3. Cyprinidae in Finland

Cyprinidae is a family of fish also known as the “carp family” or the “minnow family”. They are typically freshwater fish, but some of them have also adjusted to the brackish water in the Baltic Sea area. (Käyhkö, Setälä & Salmi, 1997) This thesis focuses on two specific species of *Cyprinidae*, the common roach, särki (*Rutilus Rutilus)* and bream, lahna (*Abramis Brama).* The names roach and bream are used on this thesis to refer to these species from this point on.

Figure 1 shows what roaches looks like.

Figure 1: Roaches caught at Vesijärvi in spring 2016.

The amount of roaches and breams in Finland has grown continuously since the early 90´s. Two main reasons have been suggested for this.

1) The species-specific fishing activities that have reduced the amount of roaches’ and breams’ predators but left their population intact.

2) Eutrophication of the water systems, which has benefitted roaches and breams at the cost of other fish species. (Käyhkö, Setälä & Salmi, 1997; Setälä et al, 2012)

2.3.1 Characteristics

Roach and bream, as any other fish species, have a certain set of characteristics. In this thesis, the focus is on characteristics that affect either the monetary or environmental value extraction. This chapter presents the characteristics. Chapter 2.3.3. Value Chains presents their effects on value extraction.

Table 4: The characteristics of roach and bream.

Characteristic	**The common roach**	**Bream**
Typical size	10-25cm, 100-300g*	25-50cm, 500-2000g**
Pack formation	Forms packs at shallow shores in May, its mating season. *	Forms dense packs at shallow bays in May-June, its mating season. **
Meat	White	White
Grams (g) of phosphorus removed from water system per 1 kilogram (kg) of fish fished.	8,5 – 10,4 g/kg ***	5,6 – 8,6 g/kg***

Grams (g) of nitrogen removed from water system per 1 kilogram (kg) of fish fished.	26,0 – 31,1 g/kg***	26,2 – 27,9 g/kg***
What does it eat?	Animals living in the bottom sediment. Plants*	Animals living in the bottom sediment. **
Consumers' prejudice in Finland	It has quite many bones. Feed it too the cats.	Divided. Some say it has too many bones. Some appreciate it as a source of food. Most don't really care about it at all. ****
- in Eastern Europe	Appreciated. Roach is dried, salted and eaten. The Russians call the dish Vobla.*****	No data available
- in China and the Far-East	No data available	Bream hasn't been sold there, but a close relative, the common carp (*Cyprinus carpio)*, is very popular. ****

- in the rest of the world	It is likely that they have no opinion on this fish species so far	It is likely that they have no opinion on this fish species so far

* (Luontoportti b, 2018)
** (Luontoportti, 2018)
*** (Mäkinen, 2008)
**** (Peteri, 2004)
***** (V. Reif, personal communication, 2016)

2.3.2 Current stakeholders

Many stakeholders are interested roaches and breams for various reasons. Multiple attempts to benefit from roaches and breams have been made over the last decades. The next chapters present the stakeholders, what do they hope to accomplish related to roaches and breams and what have they been doing to accomplish that.

2.3.2.1 Fishermen

In my experience as a start-up entrepreneur networking in the Finnish fish industry, I have found the following. The fishermen in Finland are a heterogenous group of people with different situations and aspirations. However, they all wish to be able to provide a living for themselves and their families with fishing. And only fishing. There are differences in the group, but generally they are hostile towards providing other parts of the value chains alongside fishing (such as gutting, packing, selling, marketing etc.)

Money talks among the fishermen. They don't really care which fish they are fishing, if they feel that they get a fair compensation for their work.

No fisherman has told me they wouldn't fish roaches and breams. However, no fishermen have told me they would value environmental aspects of fishing enough to take it into account in their pricing. In Setälä et al 2011, the estimated prices to be paid to fishermen from roach and bream ranges from 0,4€/kg to 2,2€/kg. In my journey as an entrepreneur, I have encountered prices ranging from 0,55€/kg to 1,00€/kg.

2.3.2.2 Public authorities (The government/RKTL/Luke)

In the Finnish public sector, there are several parties have shown interest towards utilizing the roaches and breams in the Finnish water systems. These include the ministry of agriculture and forestry and Riista- ja kalatalouden tutkimuslaitos (RKTL) (Käyhkö 1997). RKTL doesn't operate as an individual department anymore, since it became a part of Natural resources institute of Finland (=Luonnonvarakeskus, Luke) in 2015 (Raitio et al, 2015).

These public authorities have two goals.

1) Environmental benefits: Removal of phosphorus and nitrogen through fishing roaches and breams is a way to improve the state of the Baltic Sea. Excess phosphorus and nitrogen cause eutrophication in the Baltic Sea area. (Setälä et al 2012) Table 4 in chapter 2.3.1. present the amounts of phosphorus and nitrogen that can be removed through fishing roaches and breams per kilogram. In 2010 approximately 1 000 000kg roaches and breams was fished at the bays of Finland alone. Since the fishermen have not yet reached their full-capacity towards fishing these fish and since there are many commercially viable fishing opportunities for roaches and breams in the lakes of Finland, the true annual potential of roaches and breams is much greater (Vielma 2013). Thus, amount of phosphorus and nitrogen that can annually be removed by fishing roaches and breams is annually significant. Mäkinen 2008 envisioned that fish industry could partly compensate the

phosphorus and nitrogen emissions of commercial rainbow trout farming by fishing and/or processing roaches and breams as well. This idea has not since been taken to practice.

2) Taxes and employment: If commercial products were made from Finnish roaches and breams, the process would provide employment throughout the value chain. Also, taxes would be paid to the government throughout the value chain. Furthermore, if the roach and bream products replaced foreign products in Finland or were exported, they would improve Finland's current account.

To accomplish these goals, public authorities in Finland have done a lot. RKTL has written four different publications on the issue (Käyhkö, Setälä & Salmi 1997; Setälä et al 2011; Setälä et al 2012; Vielma et al 2013) and one very closely related to the issue (Mäkinen 2008). Combined these publications alone contain 226 pages of scientific study on the issue.

These publications were all part of larger, publicly funded projects that aimed towards the two goals of the public authorities. However, case after case the projects have followed the same paths. When the government subsidies the price of the fish, temporary production from roaches and breams begins. When the subsidy ends alongside with the project, so does the production. (Setälä 2012; Setälä 2017, personal communication).

Already in the 90's it was reported that the Finnish government had spent at least several hundreds of thousands of euros to accomplish its goals (Käyhkö, Setälä & Salmi 1997). Since then public funds have been used to pay for the three RKTL projects. The 2012 RKTL project costed 294 000€ Moreover, in 2010, the Finnish parliament gave 1,4 million euros to removal fishing of roaches, breams and other Cyprinidae. (Setälä et al 2012) Conservatively calculating, since the 90's the public authorities have spent way over 2 million euros in trying to solve this issue without getting any long-lasting results in return.

There is one upside to the governmental projects. With removal fishing, the cost per one ton of removed phosphorus is a bit over 50 000€. According to Hiltunen (2003), per ton of phosphorus, this is a lower price than the price of investing in enhancing the treatment of wastewater to mitigate phosphorus emissions.

2.3.2.3 Processing companies

In this thesis, processing companies refer to the companies, who buy the fish from the fishermen and are business-to-business (B2B). They create value by for example, freezing, gutting, massing and packing the fish. These companies can either be independent, have binding contracts to one marketing company or be owned by and integrated to the marketing company.

In my experience as a start-up entrepreneur networking in the Finnish fish industry, I have found the following. The processing companies have had to make vast investments in the production and cold-storage facilities. They are under pressure to make money to pay for those investments.

They are generally not interested in creating new markets themselves. How could they be, since they are not operating directly with the end-user. They will produce whatever the “marketing companies” ask them to produce, for which the fishermen can supply the fish.

2.3.2.4 Marketing companies

In this thesis, marketing companies are defined as companies that sell products made of roach and bream to consumers. The main ingredient in the products must be roach and bream but there can and often will be other ingredients as well.

Several companies produce products that fill these criteria. Here, three of them are presents as examples.

1) JärkiSärki Oy. JärkiSärki Oy produces canned, flavoured products from roach. They are working at all the levels of the value chain, starting with the fishing, continuing with the processing and ending with the marketing.

JärkiSärki Oy is founded by a couple, whose main business was organic honey production. Honey production is seasonal, there's more work to do in the summertime than there is in the wintertime. The couple thought they would like to have another source of income. The source should be seasonal as well but having the peaks of needed labor at different times than the honey production. Also, the source should in one way or another fit to the environmental values of the couple. Canned roach filled these criteria.

2) Helsingin kalatalo Oy produces convenience foods using bream and roach as the main ingredient. They don't fish themselves and they buy the fish ingredient readily processed for them. From that pre-processed fish, they produce their product in their own plant. These convenience foods are just a small part of their business, since they have a wide variety of other products

3) Apetit Oyj is listed on Nasdaq Helsinki. A negligible part of their business is that they produce Pirkka saaristolaiskalapihvi for Kesko stores. The product features two stakes, which have bream as their main ingredient. They are sold frozen.

In my opinion, JärkiSärki Oy seems to be founded on the principles of sustainability. Thus, they are more than happy to use environmental reasoning as a part of their marketing.

In my opinion, Helsingin Kalatalo Oy seems to market their product as Finnish and as healthy. They don't emphasize the environmental benefits of their product in their packaging.

In my opinion, Apetit Oyj is just doing what Kesko pays them to do. Kesko, however, wants to use this product to improve its image. They seem to want to communicate to their customers that they care about the environment. Thus, the environmental benefits of this product are very visible on the packaging and on their website (K-ruoka, 2018).

2.3.2.5 NGOs and funds

Several NGOs are working to improve the state of the Baltic Sea. The ways in which they try to do it differ. Here are presented John Nurminen foundation (NGO) and Sitra (fund), who are using roaches and breams to achieve their goals.

In 2015, John Nurminen Foundation started Lähikalahanke (Fish from near you – initiative). In that initiative the goal of John Nurminen foundation was to help build a value chain, where products can be produced from Finnish Cyprinidae. It is notable, that in 2015, none of the companies that were presented in 2.3.2.4. Marketing companies had products made from Cyprinidae in the marketplace. The product produced by Apetit Oyj (Pirkka saaristolaiskalapihvi) is a direct result of the initiative of John Nurminen Foundation. (Mäki, 2018)

John Nurminen Foundation's initiative started with building a functioning value chain for Cyprinidae in South-West Finland. One notable part in building this value chain is a phosphorus removal commission, with which John Nurminen Foundation has subsidized the value chain with 0,50€/kg of fished Cyprinidae to ensure the availability of Cyprinidae for the processing part of the value chain. (Mäki, 2018)

Suomen itsenäisyyden juhlarahasto (Sitra) (The Finnish Innovation Fund) is a fund which was founded as a gift to Finland from the parliament on Finland's 50th birthday 1967. (Sitra, 2018) Its purpose

is written in legislation: the purpose of the fund is “to promote stable and balanced development in Finland, qualitative and quantitative economic growth and international competitiveness and cooperation”. This is to be accomplished through “projects that increase the efficiency of the economy, improve the level of education or research, or study the future development scenarios”. (Finlex, 1990)

Circular economy is one of the focuses on Sitra. In 2016, they wrote “Kierrolla kärkeen - Suomen tiekartta kiertotalouteen 2016–2025”, a roadmap of Finland towards circular economy, in which they name fishing Cyprinidae as a possible method of recycling nutrients back to agricultural use from the water systems. (Sitra, 2016)

To boost circular economy, Sitra has among other things hosted a Nutritional Cycle challenge in 2016. The challenge was to suggest ideas on how to recycle nutrients in an environmentally and economically sustainable way. The challenge was open to everyone from corporations to students (Sitra, 2016b).

2.3.3 Value extraction and value chains

Several value chains are used in Finland to create and extract monetary and environmental value from roaches and breams. These value chains are presented in this chapter. The value chains are formed and presented here based on my personal experience as an entrepreneur networking in and getting to know the Finnish fish industry. All the value chains presented here are simplifications. The exact value chains used differ within the industry company by company. Here, I have formed these value chains so that they are a representative collection and combination of the value chains I have encountered in the industry.

These value chains are limited to the part that exist in Finland. If the roaches and/or breams are exported, the value chain might continue abroad.

In all the value chains presented in the next pages, the basis of value creation is the natural reproduction of roaches and breams. Without the reproduction of roaches and breams, all the value chains would collapse.

The value chains as whole and the subparts of the value chain extract monetary value most often simply by selling products to other businesses or consumers. They extract monetary value when the costs of their activities are lower than the income gotten from sales.

Environmental value extraction needs to be elaborated more thoroughly than the monetary value extraction. In the Baltic Sea and many other water systems in Finland, there are excess amounts of phosphorus and nitrogen, which causes eutrophication. Eutrophication in Finland has in full or in part led to endangering of approximately half of the marine, coastal and inland water biotopes (Kontula and Raunio, 2013). Moreover, eutrophication is causing endangering of bird species in Finland (Tiainen et al, 2015). Thus, removing phosphorus and nitrogen from these water systems creates environmental value by mitigating eutrophication and its harmful effects.

As presented in table 4 in chapter 2.3.1. Characteristics, eutrophicating nutrients, phosphorus and nitrogen can be removed from the water system by fishing roaches and breams. 10,4-8,5 grams of phosphorus and 31,1-26,0 grams of nitrogen are removed from the water system with each kilogram of fished roach. 8,6-5,6 grams of phosphorus and 27,9-26,2 grams of nitrogen are removed with each kilogram of fished bream.

Moreover, both roaches and breams accelerate the internal load of the water system. (Mäkinen 2008). Internal load is a situation, in which the nutrients, especially phosphorus, that have already been sedimented to the bottom sediment of the water system are re-released to the water body (Lahti and Rönkä, 2006).

roaches and breams accelerate the internal load by eating from the bottom segment of the lake. As they are doing so, they are stirring the bottom sediment, thus releasing once sedimented phosphorus back to the water body. Moreover, as they eat from the bottom sediment, they intake nutrients in their food. When all these nutrients are not used in the metabolism of the fish, the excess nutrients are released into the water body as urine and fecal matter. (Mäkinen 2008)

Pekcan-Hekim and Horppila (2008) estimated the amount of internal load Cyprinidae cause. They admit they could only estimate it roughly, since there are many variables affecting the amounts. The estimation was formed for fish that are 1-100g in weight. Thus, it works better for estimating the internal load of roach than the internal load of bream.

They estimated that the annual internal load of phosphorus could reduce by 7g/kg of fished roach and the internal load of nitrogen could reduce by 70g/kg of fished roach. (Pekcan-Hekim and Horppila, 2008) These amounts are to be treated with caution. Nevertheless, they show that the amount of internal load roaches cause is likely far from negligible.

Moreover, the numbers estimated by Pekcan-Hekim and Horppila (2008) only consider the internal load caused by the metabolism of roaches. They don’t consider the internal load caused by stirring the bottom sediment.

However, that can also have a vast impact on the internal load of roaches and breams. Tátrai (1987) and Philips et al (1994) argue that the fish that eat from bottom can affect the nutrient flows, since the invertebrates (=animals that live in the bottom) have an important role in the nutrient cycle of water systems. The effect can be either increase or decrease of nutrient release from the bottom.

Scheffer et al (2003) reported yet another mechanism with which the roaches and breams might affect the internal load. They reported that as these fish feed from the bottom sediment, they

uneven the surface of the sediment by leaving small pits here and there. This increases the effects of waves and disturbance of the bottom sediment. If these fish were removed, the bottom sediment might become more stable and even, which would lead to the reduction of the release of nutrients from the sediment back to the water body wind. However, Scheffer et al presents no quantitative estimation for this.

In these cases, the environmental value extraction is directly linked to the fishing. The environmental value is directly proportional to the kilograms of roaches and breams fished. This environmental value is extracted in all the value chains presented in the next chapters.

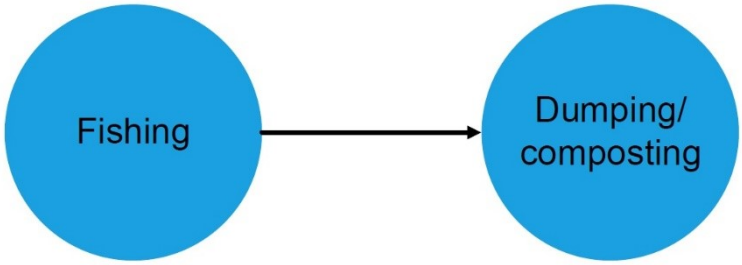
However, there's another computational way in which environmental value can be extracted from roaches and breams. If roaches and breams are used as food, they will likely not just be an addition to the existing diets, but they will also replace some items in the diet. Hilborn et al (2018) argued that fish that feed naturally in the oceans and can be harvested with low fuel-consumption provide a protein source with lower environmental impact than any other animal-based protein sources. roaches and breams are not farmed and thus feed naturally in the Baltic Sea. Furthermore, in my experience, they can be harvested with low fuel-consumption during their mating season, when the form dense packs on shores and bays. Based on this, one can argue that replacing any other animal-based products with ones made from roaches and breams will create environmental value.

This methodology works very straightforwardly, if the scope is defined to just the consumer. In this case the consumer who replaces arguably the most environmentally harmful food product there is, beef, with roach or bream, will have reduced the negative environmental impact of their lifestyle. According to Uusitalo et al (manuscript, 2018) the Global Warming Potential (GWP, [kg of CO_{2eq} / kg of protein]) of roach varies from 2,9 to 5,2 kg(CO_{2eq})/kg(protein). The Global Warming Potential of beef is around 630 kg(CO_{2eq})/kg(protein). This is over 100 times the GWP

of roach. Furthermore, in Uusitalo et al (manuscript 2018), even the GWP of 100% vegetarian meat substitutions had a higher GWP than roaches. This suggest that switching beef to roaches is at least as big an environmental act as switching to a vegetarian diet.

2.3.3.1 Removal fishing

Graph 3 shows the value chain used in removal fishing



Graph 3: The value chain of removal fishing.

In removal fishing, the goal is to extract environmental value. The active party in this value chain is often the government or other public entity that wishes to improve the environmental state of a given water system. They choose to do that by enabling the fishing of Cyprinidae, mostly small roaches and breams.

Of course, the government doesn't fish itself. They need to engage fishermen to perform this activity. The fishermen don't care about the environmental value extraction. They have bills to pay and mouths to feed. They care about their personal monetary value extraction. Thus, the government must pay the fishermen for the fish.

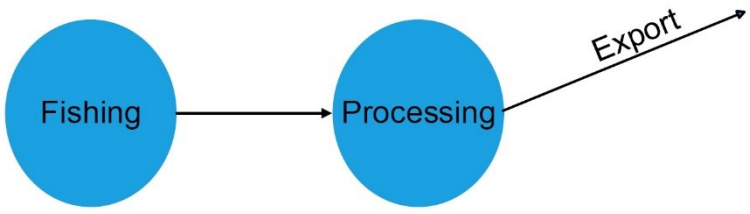
In this value chain, the fish is not utilized after the fishing. The fish can be dumped or composted. These activities are not profitable but require further funding from the government. The dumping/ composting can be performed by anyone: the fishermen or a third party.

This value chain is usable, when the extraction of environmental value is all that is achievable. In my experience, this can be the case in for example small, rural lakes where the catch is too small compared to the logistics costs to transport the catch to the processing companies. Another reason can be that the size distribution of the catch is focused on fish that are too small to be profitably processed with current equipment of the processing companies. Unfortunately, it can be argued that sometimes the reason for choosing this value chain especially in the past has been sloth or underachieving; the environmental value extraction has simply been enough for the officials paying for the removal fishing or the broadening of the value chain to include monetary value extraction through production of products has just failed.

In my experience, the usage of this value chain has decreased significantly in the last few decades. Now the government or NGO led initiatives require products to be produced from the fish. The initiatives now aim to build a coherently sustainable value chain. That means including the economic sustainability to the initiatives alongside environmental and social sustainability.

2.3.3.2 Exporting abroad as whole

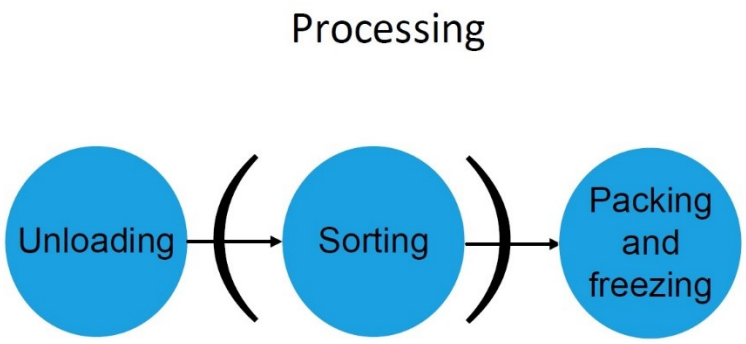
The value chain of exporting roaches and breams abroad as whole is shown in graph 4.



Graph 4: The value chain of exporting roaches and breams as whole.

The fishing is done by professional fishermen. The processing company pays them for the fish.

Graph 4.1 shows detailed chart of the processing.



Graph 4.1: Detailed chart of processing in Graph 4.

The processing starts with unloading the fish from the fishermen's boat. That is typically done in cooperation with the fishermen and an employee of the processing company. As the fish are unloading, they are weighted simultaneously to determine the right amount of payment to the fishermen.

The next part of the processing differs based on whether the roaches and breams were caught as a side catch or by targeted fishing.

Side catch means, that the fishermen were trying to catch other fish species but happened to catch roaches and/or breams as well. The percentage of roaches and/or breams in the catch can in my rough estimation vary from 1% to 40%. In this case, the fish need to be sorted based on their species before packing and freezing.

Targeted fishing means that the fishermen were trying to catch especially roaches and breams. The percentage of roaches and breams in the catch is targeted to be over 90%. In this case, the fish don't necessarily need to be sorted before packing, thus the brackets on graph 4.1.

Next, the fish is packed and frozen. These activities can be done by one machine. The employees just fill the machine with the wanted

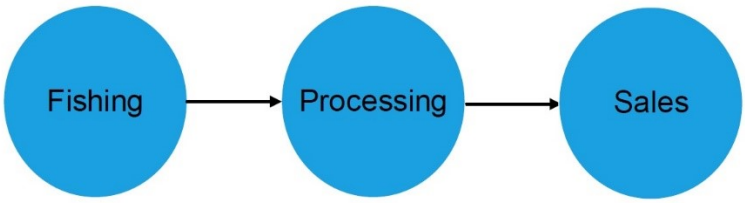
fish and it freezes them into blocks of 10kg. In this process step, the size of the fish can be crucial. The machine I have seen used, is meant for small fish such as the Baltic Herring (*Clupea harengus membras*). Thus, the machine works well with roach, which is a fish of similar size. Bream is much bigger in size. This causes issues with the machine, which results in much more labor needed to pack and freeze 100kg of bream than to pack and freeze 100kg of roach. In 2017, a processing company decided not to buy any bream from the fishermen because of this.

After packing and freezing, the fish are exported. Roaches were typically exported to Russia in the past but the international sanctions against Russia prohibited this. Since then, roaches have been exported to countries of Eastern Europe.

The processing company extracts it monetary value, when the customer in Eastern Europe pays for the roach a premium for the work done by the processing company. The environmental value extracted in this value chain is purely a side-product of a functioning business.

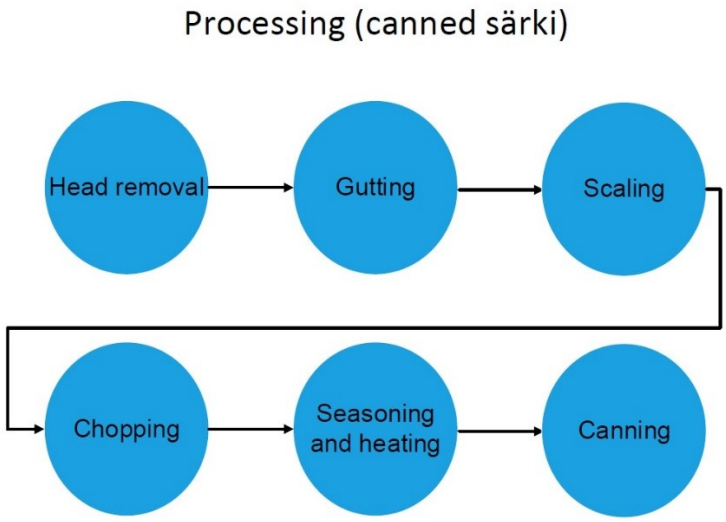
2.3.3.3 Canned roach

Products comparable to canned tuna are produced from roach in Finland. One example of the value chain of canned roach production is presented in graph 5 based on my experiences in networking and visiting plants in the Finnish fish industry. All the canned roach factories haven't necessarily built their value chain in this exact way, but they are likely to be similar.



Graph 5: Value chain of canned roach production

Fishing part of the value chain is most often left to professional fishermen. In this value chain, the unloading, sorting and delivery of the fish to the processing plant is done by the fishermen. The processing part is typically done by one or two companies. Graph 5.1 shows detailed chart of the processing.



Graph 5.1: Detailed value chain of processing in Graph 5.

Marketing companies have typically three ways of handling the processing.

1) Own the processing plant and do everything by themselves.

2) Own a processing plant. Outsource head removal and gutting.

3) Outsource the entire processing part.

Regardless of which of these models is used, these process steps need to be performed.

The plants I have visited differ significantly in their level of mechanization. It is possible the perform these process steps by hand and in theory it would be possible to have the whole process automatized. Here I will present the methods as I believe they will best represent the Finnish processing companies.

Head removal: The fish are brought to the processing factory sorted by species. Every individual fish is placed on the head removal machine by hand on their left side and their head facing left. The head removal machine will then remove the head. The head removal machine used with roach is originally built for Vendace (*Coregonus albula*)

Gutting: The fish will automatically drop from the end of the head removal machine to the gutting machine. The gutting machine automatically guts the fish. The gutting machine is equipped with two scrubbers, which will ensure that the kidneys of the fish are completely removed. The gutting machine will also rinse the inside of the fish with fresh water. The gutting machine used with roach is originally built for Vendace (*Coregonus albula*).

Scaling: After gutting, the r aoachre manually moved to the scaling machine, which removes the scales of the fish. The scaling machine is originally built for peeling potatoes, but it works surprisingly well for scaling roaches and breams.

Chopping: After scaling, the fish is rinsed and visually inspected. Then it is chopped to the wanted sized bits by hand with scissors. The caudal fin is removed at this point.

Seasoning and heating: At this point the value chain differs product by product. The roach bits can be seasoned in various ways or they can even be smoked. However, no matter what the seasoning, the roach bits are put to oil, heated and put to high pressure for x

amount of time. The heating and pressuring will soften the bones and remaining fins.

Canning: The product is now ready to be packed in cans.

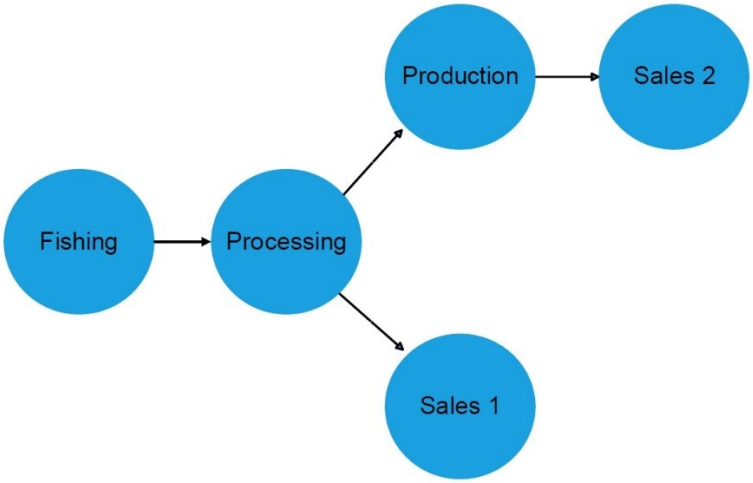
The production of a product is not enough for extraction of monetary value. The product needs to be sold.

The sales process differs vastly company by company. Since the product is food, there are some regularities.

In Finland, the food market industry is dominated by three companies. S-group is the largest with a market share of 45,9%. K-group is the second largest with a market share of 35,8%. Lidl is the third largest with a market share of 9,3%. The rest combined have less than Lidl. (PTY, 2017) Thus, a crucial part of any food products sales process is selling it to these three or at least S-group and K-Group. The wanted result of the sales process is to get the product to the stores of these companies with as good a deal as possible. If and when the product gets placed at these stores, the sales effort needs to be diverted from the companies to the consumers, the end-users. The consumers need to buy the product, or it won't keep its place in the stores. Furthermore, the monetary value extraction of the marketing company can often take place only after the consumer has purchased the product. The stores are reluctant to take the risk of the product not selling and will most likely strongarm at least small marketing companies to take the risk instead.

2.3.3.4 Minced meat products (stakes and balls)

Mass products refers in this thesis to products, where the fish is processed through similar process steps as in the production of minced chicken meat. This value chain is used for both roaches and breams. The simplified value chain is presented in graph 6

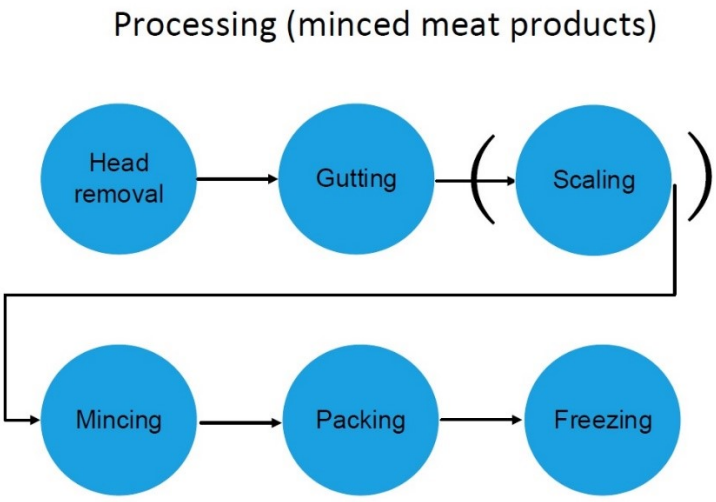


Graph 6: Value chain of minced roach/bream meat products

Fishing part of the value chain is left to professional fishermen. In this value chain, the unloading, sorting and delivery of the fish to the processing plant is done by the fishermen. Sometimes these activities can also be outsourced to another processing company.

In this value chain, the margins are often lower than in the canned roach value chain, since the end-products are often much cheaper than the canned roach products. This affects the fishing so that most often fishing for this value chain is mainly done in the mating seasons of roach and bream, when they form packs. The pack formation in mating season enables the fishermen to catch higher quantities of roaches and breams than in any other time of the year (Setälä et al, 2012). This leads to lower prices per kilogram of bream than in off season (Laitinen, Setälä and Saarni, 2006). In my experience, the same is true with prices of roach.

After fishing, the next step in the value chain is processing. Graph 6.1. shows a detailed value chain of processing.



Graph 6.1: Detailed value chain of processing in Graph 6.

In my experience, through head removal, gutting and scaling, fish are moved manually several times. One employee can move one fish at a time, regardless of the size of the fish. Thus, the bigger the fish, the lower the labor cost per kilogram of end-product. Due to the significant size difference of roach and bream presented in 2.3.1. minced bream meat is often significantly cheaper than minced roach meat. The prices at one company that is not at the market anymore, were around 3,40€/kg for minced bream meat and 6,40€/kg for minced roach meat. The price difference was mainly due to the difference in the labor cost per kilogram of end-product according to the entrepreneur. Researcher Jari Setälä claimed in 2014 that the production of products from Cyprinidae requires 30 times more labor per kilogram than the production of products from salmon. According to him, this will inevitably lead to the prices of the products made from Cyprinidae being at least twice the price of the cheapest products made from salmon.

The head removal and gutting processes used for roach here are identical to the ones used in production of canned roach in 2.3.3.3. For bream the process is similar, but different machinery needs to be used for the head removal because of the size difference of roach and bream. The processed fish is always sorted by species. The

legislation doesn't allow the sales of fish products, where the distribution of fish species used in the product is not known exactly.

Scaling: After gutting, the roaches and breams are manually moved to the scaling machine, which removes the scales of the fish. The scaling machine is originally built for peeling potatoes, but it works surprisingly well for scaling roaches and breams.

All the processing companies don't scale the fish, thus the brackets in the value chain. Companies both scaling and not scaling claim that their choice (to scale or not to scale) improves the quality of the end-product. Which is true, remains unknown.

Mincing: Next, the roaches and breams with their head and guts (and scales) removed are minced. The mincing machine has two outputs. Other is the bones and the skin of the fish and the other is the meat of the fish.

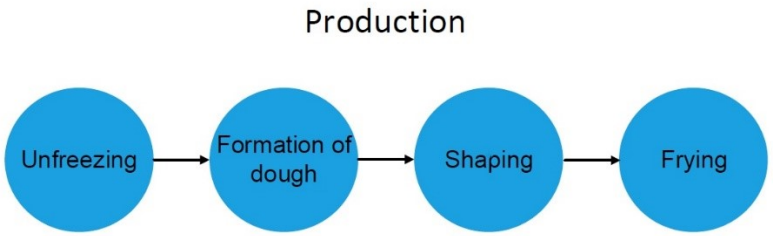
Packing: The minced fish meat is often packed to packages of 3 or 5 kilograms. The packages are plastic bags that can also be vacuum.

Freezing: The packages are frozen to degrees at least or below -18°C. In that temperature, the industry widely gives the product a best before date that is 1 – 1,5 years from the production date. This is necessary to be able to sell the product all year long even though the fish is fished mostly during one month or so.

The processing part of the value chain ends with freezing. After that the value chain is divided to two paths: Sales 1 and Production. They are looked at here a bit more closely.

Sales 1: The frozen minced roach and/or bream meat packages can be sold directly to foodservices, which will produce meals from it to schools and nursing homes. I have not studied this sales channel in depth.

Production: Graph 6.2 shows a detailed chart of production



Graph 6.2. Detailed chart of production in Graph 6.

The production is done by the marketing companies. In this value chain it is typical that the processing is done by a different company than the production.

The production starts with unfreezing the packages of minced roach or bream meat. Then a dough is formed by adding and mixing wanted ingredients to the meat. The dough typically contains a bit over 50% meat and the rest is other ingredients such as flours, cream and spices.

To produce a stake or a ball from the dough, the dough needs to be shaped to the wanted shape. Next the product is fried. Several frying methods can be used. Also, the product can be battered before frying. The stakes/ balls can now be packed, frozen and sold as they are, or side dishes can be added to their company and they can be sold as convenience food.

After this the production phase is done. Next, is the sales 2. Here, the sales process is very similar to the sales process presented in 2.3.3.3. Of course, the sales processes differ vastly depending on the marketing company in question.

2.3.3.5 Other facts to note

There are some important facts to note regarding the value chains of roach and bream that have not been examined in chapters 2.3.3.1. – 2.3.3.4. They are shortly presented here.

1) Bleeding: Some processing companies in the industry require that the roaches and/or the breams is bled. This is often done by the fishermen. The point of bleeding is to get the blood out of the fish. This is believed to improve the quality of the end-product. However, the fishermen are reluctant to bleed the fish if they are not compensated for this extra work. However, the industry is reluctant to pay anything for this. For clarity, bleeding was left out of the value chains in chapters 2.3.3.1 - 2.3.3.4.

2) Meat vs secondary flows: In my experience in the industry, the yield of fish meat is around 40%-50% of the weight of the fish. This means that the secondary flows are around 50-60%. There have been studies on the possibility of producing high-end products from these secondary flows (Vielma et al, 2013, Setälä 2011). However, these possibilities have not yet been turned to actual business cases.

One typical way of dealing with the secondary flows is selling them to fur farms, where the secondary flows are fed to the animals. The fur farms pay money for the secondary flows. Also, the secondary flows can be used as fish food in the fisheries or pig food at piggeries.

3. Case study: Särkifood Oy

The case study of Särkifood Oy is divided to three parts: 1) The beginning, 2) “the wandering” and 3) the business. In the beginning the events leading to founding the company are looked at. In the wandering, the process of getting the actual business started is looked at. In the business, the current business case of Särkifood Oy is looked at.

Paavo Vallas has written all these parts from first person point of view. This is done to emphasize that the case study is mainly a personal experience of Paavo Vallas. Thus, the information derived from it needs to be handled as a personal experience not as facts that could be applied anywhere regardless of the circumstances.

As the case study goes on the degree to which Särkifood Oy has followed the effectuation and ecopreneurship principles at each step is examined. The information provided with this examination is more reliable than the personal experience of Paavo Vallas. However, since the examination is done by the same person whose action as an entrepreneur are examined, the biases of Paavo Vallas’ values and thoughts might have subconsciously affected the results.

3.1 The beginning

I, Paavo Vallas, founded Särkifood Oy in May 2016. However, the journey of the company started already before that. In December 2015, I was returning to Finland from my exchange abroad in Limerick, Ireland. I had gotten the last courses for my bachelor’s degree done in Ireland and I needed to start my master’s degree. This was a natural point for me to stop and think about my life. What do I want with my life?

I had started a small company, Vadek teroitus tmi, in 2014. It was a one-man-company dedicated to sharpening ice-hockey skates in

the Helsinki metropolitan area. The company's purpose was to give me first-hand experience on entrepreneurship. How to start a company in Finland, how to pay taxes, how to get customers etc.? It was always clear to me that that business would not be my end-game.

The decision to start a company in 2014 made it clear to me, that entrepreneurship was a career choice I truly wanted to pursue. However, that alone wasn't enough. I needed my company to have a meaning. I needed to feel that my life had a meaning and thus my company shouldn't only focus on creating monetary value for myself. It should also create monetary value for my country, Finland, in the form of taxes. Furthermore, it should create environmental value one way or another. Already in high school I had a dream of starting a company that would "make the world a better place" while providing me with a decent income.

Based on these motivations and values of mine, I chose to continue my entrepreneurial career at Vadek teroitus tmi and to complete the Aalto Ventures Program (AVP) minor in Aalto University. In January 2016, I enrolled in to the course High growth entrepreneurship with varying content 2, as my first course of entrepreneurship.

At the time I didn't know that this evaluation of my motivations and values was actually very close to the effectual principle of starting with your means / the bird in hand principle. I very clearly evaluated who I am: my motivations and my values drove me towards the path to ecopreneurship. I also considered what I knew: my education background and my current status as a student at Aalto University were crucial in my decision to take the AVP minor instead of for example starting another company or going to works as an employee at another company at that point. I didn't really use the whom I know part of the bird in hand principle though. I didn't know anyone from AVP and I didn't know anyone else who was going to take the minor. University as a platform allowed me to take that step without having the networks.

I didn't consciously think through the effectual principle of affordable loss in this decision. I had no need, since the worst-case scenario was so mild. I could just undo my decision to take the minor at any point I wished.

However, I truly took advantage of the effectual view of the future as something that is created and not determined. I also allowed my goals to emerge over time; I didn't have a clear view of where this path would take me. Furthermore, I individually defined my success as "starting a company that makes the world a better place and provides me with a decent income". The goal for "a better place" was vague, any kind of environmental improvement would be sufficient. Decent income meant that as a student I could live without a salary from the company, but within few years of graduation I should be able to get an income that is comparable to the income of an engineer with a master's degree in Finland. In 2018, TEK's recommendation for a starting salary for an engineer with a master's degree in Finland is 3740€/month (TEK, 2018).

I attended the very first lecture of the course without prepping myself at all. In the lecture, we were told that we would be working in groups on an entrepreneurial idea throughout the entire course. We were asked to provide such ideas in the next lecture, which was few days from that lecture.

To this day, I can't know for certain, how to idea of utilizing *Cyprinidae,* especially roach, came to my mind. One plausible explanation is that in 2013 I worked for the environmental services of the city of Lahti, where I encountered the issue they had with roaches there. In one lake (lake Vesijärvi) alone, they fished almost 100 000kg of *Cyprinidae* annually. They used the value chain of removal fishing (chapter 2.3.3.1) and thus were extracting only environmental value with the activity. They had to pay for composting the fish. I remember thinking:" There has to be a better way to do this".

Another possible explanation for the idea popping to my mind is that my major in Aalto University is environmental management. I had encountered the problem of eutrophication countless times in my studies and I had heard of removal fishing as a way to tackle the issue.

I'm quite confident these both were needed for the idea to come to my mind at that time. Furthermore, my classmate Peppi Seppälä had mentioned to me that her parents were utilizing roaches (JärkiSärki products), which might have made it easier for me to remember the idea. Nevertheless, the idea of utilizing *Cyprinidae* was nothing new, when I first brought it up. However, the issues with the value chains of *Cyprinidae* were still very clear, so that I could believe that there was an entrepreneurial opportunity in forming an efficient value chain there.

In the next lecture, I stated my idea. My idea was chosen as one of the ideas around which a team on the course would be formed. Few steps later, a team was formed around the idea. I had the pleasure of working with Toni Laitila, Jami Sarnikorpi and Balázs Horváth on the idea on the course. The team was without a doubt one of the best teams I have ever had to do a group project with. The effort of these team members cannot be over-stated at this stage of the journey of Särkifood Oy. It's very likely that the journey would not have even started on 2016 without them.

After the course, the team members were unable to continue working on the project. I felt I wanted to continue with the idea, so we wrote and signed a contract stating that I could continue the journey alone with the work we had done on the course without them having demands on the company later.

So, I continued the journey of Särkifood alone. The next major step on the journey was when I took part in Sitra's Nutritional cycle challenge (Ravinnekierto challenge). I happened to win the challenge with my ideas on utilization of *Cyprinidae* in Finland. I got a prize of 10 000€ for the win. To get the prize money to my

company's account, I had to start a company. So, in May 2016, Särkifood Oy was founded.

With the win, I also got plenty of publicity. My win was the first piece of news in the front page of iltalehti.fi. I got asked to speak in national television first in Huomenta Suomi at Mtv3 and then to Puoli Seitsemän at Yle. I didn't seek the publicity, since I didn't even have a product then. I thought that I should save the novelty value of my ideas for the time when the publicity would actually help me sell products. However, I didn't decline the interview requests, since they were a big deal for me. I was in national television! The people close to me started treating me as if I had had success. That, however, was not how I had defined success. Previously. Now I allowed myself to feel that if other people feel I'm successful, then I must be successful. I allowed my ambition to decline as I felt that appearing on national television itself was some sort of accomplishment. That was something that no one could take away from me, no matter what happened to my company. However, in the long term, the publicity was just a nice thing that didn't truly bring me any closer to my true goal "starting a company that makes the world a better place and provides me with a decent income".

3.2 "The wandering"

After winning the Sitra challenge, I think I got a bit lost in my track. I didn't have anything concrete at the time. Sitra's competition was an idea competition. I had ideas, but I was nowhere near implementing them.

However, that was not a huge problem for me. I still had at least one and a half years of studies left. As I had made it clear that I wouldn't have to pay myself salary during that time, I was in no rush. Furthermore, I had made it clear to me, that I have other things that I value in my life besides the ecopreneurial track. I would like to finish my master's, remain good relationships with my friends, family

and my girlfriend. These all require time and I chose very clearly not to go down the burnout path, where the entrepreneur leaves everything else in his life to pursue his entrepreneurial dream. That was never and still isn't a viable path for me due to the bird in hand principle. My motivations and values don't support that path.

As in the idea competition, also after that I had several ideas on how to improve the utilization of *Cyprinidae* in Finland. I didn't reject any idea in any part of the value chain as long as I saw that it truly improved the utilization of *Cyprinidae* (=created environmental value) and there was a possibility that someone might pay me for it. Then, if I could only grow the volume I would be able to provide myself with a decent income.

Many of the projects, ideas and stumblings presented here were on going for a long time, often simultaneously. Some of them didn't make it pass the drawing table, others went quite far. All of them have in common that they took place between May 2016 and January 2018.

The sales agent: In the first course I took at AVP, I had the honor to work with an awesome team. With that team, we participated in the Restaurant day serving dishes made from roach. We sold over 100 dishes and got very good feedback from our products.

We got the roach for our dishes from one company producing canned roach products. After the course, I started working on the project on my own. I thought that maybe I could help that company in their marketing. On the course I had encountered a sales channel called munaeggspress.fi, where small food producers sell their products to the consumers. The consumers order the products online. The products are delivered by a van. The van drives certain pre-determined routes and stops at certain places alongside the roads. While ordering the products online, the consumer also has to choose, from which stop of the van will he pick-up his order.

I thought that the canned roach products should be sold there. I contacted the company producing the roach products and asked

them, whether they would be interested in having me as their independent sales agent. Then I negotiated that I would get a small portion of every product sold through any new sales channel I opened to them and with which price I could wholesell their products. They agreed. Next, I contacted munaeggspress.fi and asked, whether they would be interested in having these products. They were. So, all was set for the first profitable business action of Särkifood Oy.

Unfortunately for me, the company producing the canned roach products got a deal with Kesko during my negotiations. As I called them to let them know when and where to deliver the first packages for their new sales channel, munaeggspress.fi, they answered that they can't deliver any packages. All the packages they were able to produce were going to Kesko. I had to inform munaeggspress.fi that the deal was of. I couldn't keep my promise to them. It felt bad, even though my negotiation partner at munaeggspress was very understanding. Nevertheless, this business plan was trashed. Being an independent sales agent doesn't work, if one doesn't even have a product to sell.

Tempting, yet not so tempting offers: After the news about my victory at Sitra's competition, I got plenty of contacts. There were several people asking whether I could hire them. I had to refuse the offers, since they would have wanted to get paid and I wasn't even paying myself salary. There was also plenty of co-operation requests. Some of them lead to something, most to nothing. I ended up spending several evenings at networking events where I had no clue what I wanted or what I was doing. Yeah, it is nice to know more people, but how can I benefit from that if I don't even know what my company does? From those events I got some contacts that are still useful. I got some useful ideas. Nevertheless, at that point I felt that I simply cannot say yes to every invitation I got. If I did I would be spending all my time networking and none of it in actually building something that would bring me closer to my goal. I thought I had to focus and I started participating in much fewer events. At the same

time, the fame started fading away and I got fewer invitations. So, the change was easy for me.

There was one contact that I remember particularly well. This person working at Aalto University School of business contacted me and wanted to co-operate. He told me all about the structure of an umbrella concern under which he wanted to gather companies. He told me he had thought of utilizing roaches himself and that now that I had stupidly revealed my ideas at the competition, we had to move fast. I was flattered that a man of his status would like to work with me. However, the ideas never went forward. We were unable to meet in person. I remember proposing a meeting at one Saturday at 11.00 or so. He bluntly told me that he has no particular plans for that Saturday or the Friday before that, but as a young man that he is, he will not be in a condition to meet me on a Saturday at 11.00. I understand very well where he was coming from having studied at Otaniemi. However, I felt that this business would be worth skipping one Friday's partying. If he wasn't prepared to make that sacrifice for me and the company, how could I ever work with him. The co-operation planning between us was over. Here, I used the effectuation principle of strategic partnerships which not only states that partners will self-select into the venture, but also that the partnerships are valued based on the partners willingness to make actual commitments to the venture. This was clearly not the case here, no matter how attractive the CV of this self-selecting partner.

Minced roach meat: In May 2016, I took another AVP-course for my minor called Entrepreneurial marketing. For that course the final project of the team I was leading was that we served foods made from roach at another Restaurant day. Here, I encountered the problem in getting roach. It wasn't easy to buy it in any form and my previous contact with the canned roach company had gone sour, since they had to supply all their roaches to Kesko.

One way or another I found that Kala-apu Oy in Turku was producing minced roach meat. I arranged a meeting to Turku. The entrepreneur there was very excited about a university student

visiting him and provided minced roach meat to me happily for my Restaurant day.

After the restaurant day, I started wondering, whether I could sell the minced roach meat directly to consumers. I contacted Kala-apu Oy again and they produced for me packages of 500g of minced roach meat. I sold them in Otaniemi for everyone I knew and asked their opinions on the product. I didn't market at all, since I didn't know what the legislation of Finland would say about me selling minced roach meat packages from the freezer of my one-bedroom student apartment. The freezer was always clean, but I doubted the other parts of that apartment would have passed any criteria set by Evira or other officials.

The feedback was positive. I didn't take it too seriously, since the feedback was coming from only the people I already knew. They wouldn't want to insult me, so of course they would say the product is good. Few people came to ask me, whether they could buy more. This proved to me that the product wasn't all too bad. However, I still got some feedback about the color, structure and smell of the product. The color was greyish, the structure was relatively watery, and the product would smell unpleasantly fishy when the consumer would unfreeze it.

Nevertheless, I thought there might be something to this product. However, before I could discuss things further with Kala-apu Oy, the company shut down. Their rental contract had expired and was not re-established. The entrepreneur didn't want to go through the trouble of moving to another location and thus the journey of Kala-apu Oy ended.

Networking isn't that bad: One of the networking events I was invited to was Bees and trees by Demos Helsinki. There the purpose of them was to connect start-ups with large corporations to find win-win situations. Särkifood Oy was connected with the sustainability people of one of the major players in the Finnish food industry.

Särkifood Oy still had no on-going business activities. Nevertheless, it was somehow agreed that Särkifood Oy would produce stakes for Särkiburgers (=burgers, which have a stake made form roach) to be served at their gas-station chains. First of course, I needed to provide sample stakes for their food R&D department. This was all agreed with the sustainability department of the company. They were very delighted of the opportunity to have Särkiburger as a product in their company, since they were well aware of the positive environmental effects of switching to roach.

Having the Kala-apu Oy connection, I had what I thought was a stable provider of minced roach meat at the time. I knew how to make stakes from minced roach meat based on my experienced at the Restaurant days. However, I knew I couldn't make the stakes at my own student apartment. I had to find an industrial partner to produce the stakes.

I found two suitable companies. Särkifood Oy provided them with ingredients and recipes and they created the sample stakes. Then I had to deliver the samples to the large corporation. I agreed the delivery place with a person on their food R&D team.

I didn't meet the guy in question, but I delivered the sample stakes as promised to their warehouse in Helsinki at the agreed time. Hours after my delivery, the person from the food R&D team texted me, that he was actually testing the sample foods at their other warehouse in one of the cities alongside road 4, northern than Vantaa but southern than Lahti. Not in Helsinki anyway. If I didn't deliver the samples, the deal was of for now. So, I drove again from my home at Espoo to Helsinki and to this other city to deliver the sample stakes. Yeah, no problem, I told the person on their R&D team when I finally gave him the samples.

Some days later, I received a message from him. The samples were unsatisfactory and thus the deal was of. Moreover, the samples contained fish, they had an issue with fish allergic customers. They wouldn't be able to fry the stakes in any way at their gas stations.

They would only be able to microwave them. So, the improvements of the recipes of the stakes could never fix the problem, and they wouldn't want any more samples from me.

I was not pleased with this result. I felt that the R&D team definitely didn't share the company values that the sustainability team had told me their company valued. I felt as if they were even hostile towards this kind of new product. However, at that time it had come to my knowledge that my roach supplier, Kala-apu Oy, had went out of business. So, I didn't have any roach to produce the stakes. So, as I was disappointed, I also felt like I dodged a bullet of again promising something I couldn't deliver after all. I left pursuing this business plan to this.

The ideas of others: One really could thing about being an ecopreneur is that people in general seem to be very interested in what I do and very supportive towards me. Very often they want to throw ideas for me to improve my company. I'm very grateful to everyone, who has ever thrown an idea at me. I have spent time in thinking through all of them. Here's a few of them elaborated

1)Why don't you fish yourself? Short answer: the bird in hand principle. Long answer: I don't want the lifestyle of a fisherman. I don't want to invest vast amounts of money to a fishing boat. I don't have the expertise needed for fishing. I don't believe I could make a decent income with fishing. I think as a fisherman I would have to compromise my environmental values at some point to the altar of monetary values. To mention a few of the reasons.

2) Why don't you process yourself? I don't want to invest several hundreds of thousands of euros into a processing plant, which could only operate a few months in a year with roaches and breams. The other time the plant would have to process other fish, which would not produce any environmental value. Moreover, I don't think I have the expertise or the motivation to run a processing plant. Moreover, purchasing such a plant would severely tie down my entrepreneurial path in the future. My future efforts would all need to be related to

the plant. I don't want that commitment with the current knowledge on the industry.

3) Why don't you start a restaurant or a food truck? The bird in hand principle. I don't have the motivation or the expertise to run a restaurant or a food truck. Moreover, I don't want to tie my entrepreneurial path down to a single car or a restaurant. Moreover, I'm skeptical I could ever make a decent income with that choice.

4) Why don't you get investors? Särkifood Oy is a one-man company without a clear business plan. No angel-investor in their right mind is going to fund Särkifood Oy at this stage. I wouldn't. Even if they would, the valuation would be so low, that it would not bring in enough money to compensate for the decline in my motivation due to having to give up equity.

Machines: Having visited several processing companies working in the industry in Finland, I had made what I thought was a groundbreaking observation. The amount of labor used in the plants was astonishing. The fish were sorted by hand, they were put to the machines by hand. At some factories their heads and guts were removed by hand. All of this in Finland, where the cost of labor is known to be high. No wonder the price of the products has to be too high for a common man to buy them. Price is one of the most important criteria for consumers when buying food, so no wonder the sales of *Cyprinidae* are so low.

I thought that many of the process steps performed by hand could be done by machines. Sorting the fish, placing the fish on the machines, moving the fish from place A to B in the plant. I was and still am confident that these jobs could be done by machines. The technology to build such machines exists, it just hasn't been brought to Finland and to the fish industry.

At the same time, I knew that the public authorities had poured millions of euros in trying to solve this problem by creating publications and subsidizing the fishing. There were still on-going funding instruments for purposes related to this. I thought that I

should apply for these fundings and start a project with the purpose of improving the use of machines in the processing factories of roaches and breams. I didn't personally have any experience in such machines, but I thought I could serve in the project as an expert of the industry.

Long story short, my plan failed. One public organization was interested in funding this kind of project but couldn't get the funding for such a project in the end. Other public organization required that the project budget should be at least 100 000€ and that Särkifood Oy would have to participate with 20 000€ - 50 000€. I didn't have that kind of money and to seal the deal another public organization told me that the afore mentioned organization is never going to give Särkifood Oy any money; they had never given money to anything fish related in their history. Yet another public department told me that the idea was good in general, but a one-man company run by a student was not a company to which they would give funding to. They told me that I should fill in the application anyway, just to get the valuable experience on filling applications. I didn't.

Overall, the field of public funding is a swamp to drown in for a start-up entrepreneur. There are tens of different instruments with their specific purposes and specific targets. Applying for one of these instruments can require full-time work of several weeks. Applying for all of them could easily full-time employ one employee throughout the year. I had neither the time nor the energy to go thoroughly through this swamp. It is still possible that the funding suitable for Särkifood Oy is out there somewhere.

I still believe that by using machines in the processing part of the value chain the effectiveness of the whole value chain could be improved significantly. The time has not yet been right for me to pursue this road and I personally still don't have any expertise in the building of such machines. Nevertheless, I sincerely feel that addressing this issue could significantly ease the utilization of *Cyprnidae* in Finland.

Swim bladders: I had read from Setälä et al (2011) that it would be relatively easy to extract gelatin from the swim bladders of roaches and breams. I still needed academic credits, so I thought I could do an individual lab research course, where I would research this extraction possibility. I couldn't find a suitable solution for this in Aalto University, but I was lucky enough to find one at University of Helsinkis campus at Lahti.

I got the swim bladders I needed from Kala-apu Oy and I examined the extraction possibilities for two weeks at Lahti. They didn't have all the equipment I would have hoped for, so my results were left inconclusive. Nevertheless, I was able to produce a substance as transparent as gelatin with a structure similar to gelatin from the swim bladders. I'm quite confident, the substance was gelatin.

Furthermore, I was contacted by a student of Metropolia University of Applied Sciences. She told me that in the conservation industry the swim bladders of sturgeon, an endangered fish species, are still sometimes used for their high and functional gelatin content. She was hoping that I could research, whether the sturgeon swim bladders could be replaced with the swim bladders of roaches and breams. However, my lab studies were inconclusive to say anything on the issue. Replacing the sturgeon swim bladders with swim bladders of other fish remains an interesting yet un-examined opportunity.

However, these business opportunities would require more research into the production of gelatin from swim bladders and a steady supply of swim bladders. I don't personally want to pursue a career as a researcher (bird in hand principle) and there isn't a steady supply of the swim bladders, so I ditched this idea.

The value chain: As I started to write this thesis, I took a closer look at the value chains used in the industry for roaches and breams. I identified the seasonality of processing as one of the issues. Roaches and breams can only be fished during few months. What

do the processing company do with their equipment during the other 10 or so months?

In April 2018, I got an idea. The processing companies freeze the minced roach meat anyway after its production. What if the fish were frozen as whole, before producing the minced roach meat from them. Then the fish would be unfrozen whenever the minced roach meat was needed and provided to the marketing companies as unfrozen. That way the processing companies could operate also outside of the fishing season raising the utilization rate of their machinery. Furthermore, the capital tied to the inventory would be much lower, since the fish would be in the inventory as a whole. If the yield is 50% and the price of roach as a whole is 1€ and the price of it minced is 6,4€, the value of an inventory of 10 000kg of roach meat would cost 20 000€ if the roach is stored whole and 64 000€ if the roach is stored minced. However, the roaches as a whole would require twice the space than minced roach meat, which would even the difference in costs. Nevertheless, I thought this could be an attractive business opportunity.

So, I sent a message to one of the companies that produced the sample stakes for me in “Networking isn’t that bad” and introduced my idea. They agreed that my idea could be very beneficial. We agreed that if I was able to find roaches and/or breams and a place to store it frozen, they would provide me the machinery needed to produce minced fish meat from then. So, they would help Särkifood Oy take a change in the processing part of the value chain. I went for it and started using my network to find roaches and/or breams and suitable places to store it frozen. The mating season was already on, so I was in a hurry.

3.3 The business

I used my contacts the best I could, but it seemed that I was simply too late. I would have to wait until the spring 2019 for the next mating season to test this improvement on the value chain.

Then, I got a phone call from Brännskata Fiskare Oy Ab. They told me that in their area the fishermen were catching record amounts of bream. They were themselves producing minced bream meat and could sell it to me. The buying of minced bream meat wasn't on option for me. However, my previous idea of selling minced roach meat to consumers in packages of 500g resurfaced to my mind. Selling minced bream meat would have similar environmental benefits and monetary possibilities. They were interested, and we arranged a meeting.

In the meeting, I prepared two dishes from the minced bream meat to the persons in charge of Brännskata Fiskare. They were convinced. We agreed to work together.

To overcome the issues I had with the product last time, (the color, the structure and the smell of the product), I used methods and recipes I had tested in my home kitchen. So, we wouldn't only sell the plain minced bream meat, we would improve it. They oversaw the production of this new product and I was in charge of the sales and marketing. Särkifood had found its place in the value chain as a marketing company.

The first sales channel of the products was munaeggspress.fi, whom I already knew from "the sales agent" part of the wandering. I contacted them again and arranged a meeting. The negotiations were short; they were interested in taking the product to their sales channel.

The first products of Särkifood Oy were sold through Munaeggspress.fi in 6.8.2018. The sales look promising and the customer feedback has been very positive.

My definition of success was: “starting a company that makes the world a better place and provides me with a decent income”. I have now accomplished the starting the company part and I’m moving towards the income. However, it’s still a long way ahead.

4. Results and discussion

The two goals of thesis mentioned in Introduction were 1) “To produce new information about the possibilities of using effectuation to develop more beneficial methods for utilizing Cyprinidae in Finland.” and 2) “To produce new information on how effectuation and ecopreneurship can be used together in the first phases of journey of a start-up.”

As mentioned in 2.1 Effectuation, effectual reasoning can be especially beneficial in highly uncertain situation, such as targeting a new, emerging market. According to Vallas’ personal experience different stakeholders have tried to utilize Cyprinidae in using it in place of other fish species in limited pre-defined value chains. There, the reasoning has been very causal. Especially the public authorities have in their projects used extremely causal reasoning, which might be one reason for the failure of such projects to accomplish their desired long-term goals. If projects regarding this subject are to be continued, their starting point could be the bird in hand principle. Who are the people and organizations taking part in the project? What are their motivations and values? What are their means and how could they be used? Moreover, also the strategic partnerships principle should be applied. The participants of the projects should all be willing to make actual commitments to the project. This has not always been the case.

Other stakeholders’ level of effectual versus causal reasoning differs more company to company, person to person, organization to organization. Regarding the value chains of Cyprinidae, almost all fishermen use very causal reasoning. They want to fish the fish and that’s it. However, some of them can use effectual reasoning in improving their methods of fishing. This can improve the effectiveness of the value chains.

The processing companies differ vastly in their usage of effectual versus causal reasoning. Some companies are very causal and focus only on their existing markets. Other companies can either be open to effectual reasoning from other stakeholders or be effectual themselves. Typically, they have to focus on their existing markets and use causal reasoning to pay for the vast investments they have had to make for the processing plants.

Marketing companies differ in their usage of effectual versus causal reasoning as well. New products have been created from roaches and breams. However, it is hard to estimate how much effectual and causal reasoning has been used in these processes, since no very little information about the journey leading to these products is available.

NGO's and funds also differ in their using of effectual and causal reasoning and furthermore in their way of promoting effectual or causal reasoning in other companies. Sitra's Nutritional cycle challenge left room for effectuation. The purpose of the challenge was to get ideas to help recycling nutrients. How this was done and by who, was all left open. This left room for effectual reasoning, since the goal was not too strictly pre-defined. Furthermore, their decision to not ear-mark to prizemoney for any certain purpose gave Särkifood Oy the possibility to act effectually with the money.

There is a huge difference if this activity is compared to John Nurminen Foundation, which has projects with pre-defined goals. They use very causal reasoning.

Based in this, it seems that effectual reasoning could best be used to improve the utilization of Cyprinidae in Finland by public authorities, NGO's and funds and marketing companies. Especially fishermen have such a pre-defined goal, that causal reasoning can be more beneficial to them. That is to some extent also true for the processing companies, who mostly have to maintain their existing business plans to pay for the expensive plants they have.

The public authorities could use effectual reasoning as Sitra has done to empower the stakeholders of the value chains to use their creativity to create new markets for *Cyprinidae*. The existing markets have proved to be difficult for them. The NGO's and funds not using effectual reasoning could try to utilize it for the same reasons.

Marketing companies have the biggest opportunity to use effectuation, since they have the most space to move in. They are the freest to pursue and create new markets in the value chain. Särkifood Oy has had a rocky road, but it has proven that new markets and/or product segments can be opened with effectual reasoning.

The second goal of the thesis was to produce new information on how effectuation and ecopreneurship can be used together in the first phases of journey of a start-up. A core principle of effectuation is to let the goal emerge over time. However, ecopreneurship limits the scope of goals to those with both desired ends: monetary and environmental benefit. This can limit the entrepreneurs' creativity.

Thus, ecopreneurship should never be a title or a limitation given from outside of the company. It should always be originated in the bird in hand principle; who the entrepreneur is, what are their motivations and values. Being on ecopreneur means that the environment is an important value to the ecopreneur. If the ecopreneurship is originated from the bird in hand principle, it doesn't collide with effectuation, but they can both be used simultaneously.

Furthermore, effectuation and ecopreneurship can be re-enforcing if used correctly. Having a simple, easy-to-understand environmental mission gives the start-up several possibilities. First, the entrepreneur and the possible employees can feel more motivated as they can feel their work has a meaning. Second, other stakeholders are likely to be willing to help the start-up, since they feel that helping the start-up leads to something universally good

rather than just the entrepreneur getting rich. Third, it is easy to get publicity when truly having an environmental mission. This is not to be mixed with having an environmental mission just to get publicity and shine the brand a.k.a. greenwashing. Especially the second part, the willingness of other stakeholders to help the start-up can open up surprising and extremely beneficial possibilities for an entrepreneur with the courage to use effectuation in such a situation.

It seems to be so that the ecopreneur's values don't change or change slowly. Thus, the re-defining of success to leave out the environmental benefits will most likely lead to disorientation of the ecopreneur. This happened to Paavo Vallas as outside pressure made him re-define success through publicity. This result is derived from only this one experience and thus cannot be seen as a universal truth. However, any outside partied affecting ecopreneurs should take this possibility into account. Especially investors are likely to dismiss to environmental values of the ecopreneur. This can be counter-effective to both the angel investor and the ecopreneur as it might lead to the disorientation of the ecopreneur.

All the result presented here are filtered through Paavo Vallas' personal experiences in the case study of Särkifood Oy. Thus, they are all affected by Paavo Vallas' personal values and biases and cannot be taken as universal facts. The more the results are based on the case study, the more probable it becomes that the biases have influenced the results.

5. Conclusions

Effectuation is not used to its full potential currently in the Finnish fish industry. Especially the marketing companies could utilize effectuation more to create new markets for products made from roaches and breams. Moreover, the public authorities should consider using effectual reasoning in their projects to get more long-lasting results.

Effectuation and ecopreneurship can be used together effectively in start-ups if the ecopreneurship principles are derived from the bird in hand principle. Having both effectuation and ecopreneurship in a start-up can have several benefits. The biggest of these is that the ecopreneurial mission can open possibilities for the effectual reasoning by making it more desirable for other stakeholders to help the start-up or to co-operate with the start-up.

Since these results are derived from the personal experiences of Paavo Vallas in the case study of Särkifood Oy, more research is needed to confirm these results. Especially needed would be research on effectuation possibilities to improve the quality of the projects of public authorities; quality meaning the accomplishing of long-term benefits.

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